

CLAIMS

1. A beverage dispenser comprising a housing (40, 42, 44) containing a diluent valve (46A, 46B) and at least two concentrate
5 valves (48A, B, C, D), each valve having its own inlet (12) and outlet (14), characterised in that all the outlets (14) lead to a single dispense nozzle (50A, B, C), a flow rate sensor (16) is provided for each valve, the flow rate sensors (16) being connected to a controller (54), and a setting mechanism (52A, B, C, D, E, F) is provided to open and close
10 each valve, the controller (54) operating the setting mechanisms whereby one concentrate valve and the diluent valve may be opened to dispense a particular beverage and, in response to the sensed flow rates through those opened valves, controlling the degree of opening of those valves to achieve a predetermined diluent to concentrate ratio for the
15 beverage mixture in the dispense nozzle (50A, B, C).
2. A beverage dispenser according to Claim 1, characterised in that the housing (40, 42, 44) contains four concentrate valves (48A, B, C, D), each with its own inlet, outlet, flow sensor and setting mechanism to open and close the valve.
- 20 3. A beverage dispenser according to Claim 1 or 2, characterised in that the housing contains two diluent valves (46A, 46B).
4. A beverage dispenser according to Claim 1, 2 or 3, characterised in that the housing (40, 42, 44) is of modular design and wherein a plurality of modules is grouped together to provide a single dispense
25 unit.

5. A beverage dispenser according to Claim 4, characterised in that the inlets (12) of at least two concentrate valves are connected to a source of the same concentrate.
6. A beverage dispenser according to any preceding claim, characterised in that the flow rate sensors (16) are flow turbines.
7. A beverage dispenser according to any preceding claim, characterised in that the flow rate sensors (16) measure flow rate by calculation from another property.
8. A beverage dispenser according to any preceding claim, characterised in that the setting mechanisms (52 A, B, C, D, E, F) are stepper motors, lever mechanisms, proportional solenoid actuators or diaphragm operated mechanisms.
9. A beverage dispenser according to any preceding claim, characterised in that at least one of the valves comprises a substantially rigid housing (34) containing a passageway between an inlet and an outlet of the valve, a closure member (22) movable in the passageway from a first position in which the valve is fully closed to a second position in which the valve is fully open, the closure member (22) engaging the wall of the passageway to seal the passageway, the wall of the passageway or the closure member defining at least one groove (36), the groove having a transverse cross-section that increases in area in the downstream or upstream direction, whereby movement of the closure member (22) from the first position towards the second position opens a flow channel through the groove (36).
10. A beverage dispenser according to Claim 9, characterised in that the groove (36) is of tapering V-shape.

11. A beverage dispenser according to any preceding claim, characterised in that the concentrates are cooled prior to entry to the housing (40, 42, 44).

12. A beverage dispenser according to any preceding claim,
5 characterised in that the controller (54) is programmed to monitor the rate of flow of concentrate through the concentrate valves (48A, B, C, D) and to adjust the rate of flow of diluent through the diluent valve (46A, B) accordingly.

13. A beverage dispenser according to any preceding claim,
10 characterised in that at least one of the valves (10) has its inlet leading via the flow meter (16) to a first passageway (36), the first passageway (36) communicating with a second passageway (20) at right angles thereto, one end of the second passageway (20) leading to the outlet (14) of the valve and the other end of the second passageway (20) receiving a
15 piston (22) in sealing engagement with its internal wall, the piston (22) being reciprocable in the passageway by the setting mechanism (30, 32) to open and close the valve.

14. A beverage dispenser according to any preceding claim, characterised in that the controller (54) is connectable to an installation
20 means (56) to input required data and to a control panel (58) whereby a required beverage may be selected for dispense.

15. A beverage dispenser means according to any preceding claim, characterised in that the setting mechanisms (52A, B, C, D, E, F) are stepper motors and the dispenser consumes energy only when the
25 stepper motors are moving.